

What is claimed is:

1. In a device having a glass body forming a chamber hermetically sealed by one or more pinch seals formed in the body wherein a metallic foil provides an electrical connection through a pinch seal, a method of protecting at least a portion of the foil from corrosion by coating at least a portion of the foil with a film comprising silica.
2. The method of Claim 1 wherein the foil is molybdenum.
3. The method of Claim 1 wherein the device is an electric lamp.
4. The method of Claim 3 wherein the lamp is a high intensity discharge lamp or a halogen lamp.
5. The method of Claim 4 wherein the foil is molybdenum.
6. In a lamp wherein a molybdenum foil in an electrical lead assembly is coated to protect at least a portion of the foil from oxidation during operation of the lamp, the improvement wherein the coating comprises silica.
7. A method of preventing the oxidation of at least a portion of a metallic strip comprising the step of coating the portion of the strip with a film comprising silica.
8. The method of Claim 7 wherein the strip is a molybdenum foil in an electrical lead assembly.
9. In a method of making an electrical lead assembly including a metallic foil, the improvement wherein at least a portion of the foil is coated with a film comprising silica.
10. The method of Claim 9 wherein the foil is molybdenum.
11. The method of Claim 9 wherein an electrode lead is attached to one end of the foil.

12. The method of Claim 11 wherein an outer lead is attached to the other end of the foil.

13. A method of coating a metallic foil with a corrosion-protective film comprising the steps of:

(a) adhering a silica colloid to at least a portion of a metallic foil; and  
(b) exposing the silica colloid adhering to the foil to a fusion temperature to effect fusion of silica particles to thereby form a silica film on the foil.

14. The method of Claim 13 wherein at least a portion of the foil is immersed in a bath comprising colloidal silica and withdrawn so that silica colloid adheres to at least a portion thereof.

15. The method of Claim 14 wherein the foil is withdrawn from the bath at a rate of about 1 mm/sec to about 100 mm/sec.

16. The method of Claim 15 wherein the foil is withdrawn from the bath at a rate of about 25 mm/sec.

17. The method of Claim 14 wherein the bath comprises Nissan Chemical type MA-ST-UP.

18. The method of Claim 14 further comprising the step of applying a voltage to the metallic foil concurrent with immersion and withdrawal of at least a portion of the foil in the bath.

19. The method of Claim 14, wherein the bath of colloidal silica further comprises a binder selected from the group consisting of cellulose nitrate, polyvinylalcohol, polyacrylamide, and polyvinylpyrrolidone.

20. The method of Claim 14, wherein the bath of colloidal silica further comprises a surfactant.
21. The method of Claim 14 wherein the foil comprises molybdenum.
22. The method of Claim 13 wherein silica colloid adhering to the foil is exposed to a fusion temperature of about 1400 °C to about 1700 °C.
23. The method of Claim 22 wherein silica colloid adhering to the foil is exposed to a fusion temperature of about 1600 °C to about 1700 °C.
24. The method of Claim 23 wherein the fusion temperature is about 1650 °C.
25. The method of Claim 13 wherein silica colloid adhering to the foil is exposed to the fusion temperature for about one-half second.
26. The method of Claim 13 wherein the foil comprises molybdenum.
27. The method of Claim 13 wherein the silica colloid is adhered to at least a portion of the foil by electrostatic spray coating, rolling, brushing, or misting.
28. The method of Claim 13 wherein the step of exposing the silica colloid adhering to the foil to a fusion temperature includes exposing the colloid to a heated wire coil, an induction coil, an imaging furnace, an inert gas plasma, or a laser.
29. A method of applying a silica coating to a metallic foil comprising the steps of introducing silica powder to the plume of an argon plasma torch and passing the foil through the plume.
30. A method of making an electrical lead assembly comprising the steps of:
  - (a) providing a molybdenum foil;
  - (b) adhering silica colloid to at least a portion of the foil;

(c) exposing the silica colloid to heat to effect fusion of the silica particles to thereby form a silica film; and

(d) attaching an electrical lead to one end of the foil.

31. The method of Claim 30 wherein a second electrical lead is attached to the other end of the foil.

32. The method of Claim 31 wherein the second lead is attached to the foil by crimping a portion of the foil around a portion of the lead.

33. The method of Claim 30 wherein the electrical lead forms an electrode for a high intensity discharge lamp.

34. The method of Claim 30 wherein the electrical lead forms a filament for a halogen lamp.

35. A method of exposing a metallic strip to a predetermined temperature for a predetermined time comprising the steps of:

(a) providing a heat source;

(b) elevating the temperature of the heat source so that the temperature in close proximity to the heat source is the predetermined temperature; and

(c) passing the metallic strip in close proximity to the heat source at a rate to effect the exposure of the ribbon to the predetermined temperature for the predetermined time.

36. The method of Claim 35 wherein silica colloid adheres to at least a portion of the metallic strip and the exposure of the strip to the predetermined temperature effects fusion of silica particles to thereby form a silica film.

37. The method of Claim 35 wherein the predetermined temperature is between about 1400 °C and about 1700 °C and the predetermined time is about one-half second.

38. The method of Claim 37 wherein the predetermined temperature is between about 1600 °C and about 1700 °C and the predetermined time is about one-half second.

39. The method of Claim 35 wherein the exposure is conducted in an inert atmosphere.

40. The method of Claim 35 wherein the heat source is selected from the group consisting of a conductor, induction coil, an imaging furnace, an inert gas plasma, and a laser.

41. The method of Claim 40 wherein the heat source comprises a coiled tantalum wire heated by the passage of electrical current therethrough.

42. A lamp comprising:

a glass body forming the light emitting chamber of said lamp;

a pinch seal in said glass body; and

an electrical lead assembly providing an electrical connection through the pinch seal, said assembly comprising a metallic foil having a silica coating on at least a portion thereof.

43. A molybdenum foil suitable for providing an electrically-conducting path through a pinch seal in an electric lamp having silica film on at least a portion thereof to thereby protect the portion from oxidation when exposed to air at high temperature.

44. In a device having a chamber hermetically sealed by at least one pinch seal and an electrical lead assembly for providing an electrically-conducting path through the pinch seal, the assembly comprising a metallic foil positioned in the pinch seal, the improvement wherein the foil extends outward from the pinch seal to thereby form an outer electrical lead for the device.

45. The device of Claim 44 wherein the foil is molybdenum and is coated with an oxidation-protective film.

46. The device of Claim 45 wherein the film is silica.

47. The device of Claim 46 wherein the chamber forms the light emitting chamber of an electric lamp.

48. A method of coating at least a portion of a molybdenum foil with a silica film comprising the steps of:

providing a bath including colloidal silica and a binder selected from the group consisting of cellulose nitrate, polyvinylalcohol, polyacrylamide, and polyvinylpyrrolidone;

immersing at least a portion of the foil in the bath;

withdrawing the immersed portion of the foil from the bath at a rate between about 1 mm/second to about 100 mm/second so that silica colloid adheres to at least a portion of the foil; and

heating the silica colloid adhering to the foil to a temperature between about 1400°C to about 1700°C for about one second to effect fusion of silica particles in the colloid.

49. The method of Claim 48 wherein the bath includes silica in methanol.

50. The method of Claim 48 wherein the bath includes water and ammonia and the binder is polyvinylpyrrolidone.

51. The method of Claim 48 wherein a voltage between about one volt and about ten volts is applied to the foil during the immersion and withdraw of the foil from the bath.